


GENERAL INFORMATION

T-PRO50 is the concentrated version of T-PRO anti-tarnish chemical passivation. It is sold in a 1 liter package that yields 50 liters of ready-to-use solution when mixed with deionized water. T-PRO, part of the T-FENDER line, is a chemical passivation agent developed for metallic substrates which naturally have poor corrosion resistance, like silver, brass, bronze, low karat gold, and some electroplated layers. By applying T-PRO to these metals, resistance to oxidation (tarnish) is dramatically elevated by providing an invisible layer which seals the substrate from external elements. Laboratory tests have proven that chemical passivation protects from corrosion originating from hydrogen sulfide, UV radiation, synthetic sweat, and humidity. T-PRO is easy to use, not requiring any electrical current and works simply by heating up the product and dipping in your object. By adding T-SALT, Legor Group conductive salt solutions, T-PRO can also be used by galvanic process to increase its protection level.

Product form

Product's pH	Acidic/Neutral
Solution form	Concentrated
Plating solution color	White
Storage time	18 months
Volume	1 liter

Deposit data

Solution appearance	Totally transparent
Plating solution color	Transparent
Thickness range [µm]	0,001 - 0,010


Operating data
RANGE
OPTIMAL

	RANGE	OPTIMAL
pH	5-7 and 3-4 after salts dissolution (fo	4.0
Voltage [V]	3.5 - 4.5 (electrolytic way)	4.5
Working temperature [°C]	55-60	55
Exposure time (sec)	5 - 20 (minutes)	7.0
Anode type	Mixed metal oxide (MMO) or Titaniu	
Agitation	Moderate	

**PREPARATION**

Heat the T-PRO50 to 60-65 °C for approx. 30 to 60 minutes (bain-marie) until a completely waterwhite solution has formed. **DO NOT ADD THE T-PRO50 WHEN COLD OR AT ROOM TEMPERATURE!** The active ingredients are insoluble at low temperatures, you risk obtaining a sub-optimal ready-to-use solution.

To prepare the ready-to-use T-PRO solution add the 1 liter solution of T-PRO50 in 49 liters of deionized water.

Switch on the exhaust system and start to mix the concentrated form with deionized water until getting an almost homogeneous solution.

Standard Use: For optimum results the solution must be in a transparent state. Heat up to 55-60° C. The solution becomes transparent in this range: higher or lower temperatures will make the solution turbid.

Electrolytic use: In case of electrolytic usage through direct current application, add 2.5 g of T-SALT conducting salts per liter of ready-to use solution and wait their complete dissolution. Check the pH which has to stay around 3.5. If too low adjust it with the addition of 0.2 g/l of sodium hydroxide. **IMPORTANT:** To achieve optimum protection, overdosing of sodium hydroxide should be avoided. Therefore we recommend a dilute solution (e.g. 20 g/l NaOH). Then heat up at the same temperature of the standard usage and stir for 15-30 minutes. At this point the solution is ready to be used under electrolytic way. Apply a voltage using a DC power-rectifier in the range of 3.5 - 4.5 V for 5-6 minutes.

EQUIPMENT

For a correct use of this product you are advised to use PVC, polypropylene or PYREX glass tanks provided with thermostat-controlled heaters. Do not use stainless steel or iron tanks.

PRODUCT USAGE

To get optimum results please follow these following steps:

TREATMENT OF SILVER PLATED PIECES

1. Rinse and wash in D.I. water
2. Rinse
3. Acid neutralization
4. Rinse

5. **STANDARD USAGE:** Immersion in T-PRO for 10 minutes (with moderate agitation)

ELECTROLYTIC USAGE: Immersion in T-PRO with T-SALT conducting salts (previously dissolved in) for 5-6 minutes (with moderate agitation) at about 3.5 - 4.5 V

6. Rinse with demineralized water
7. Rinse in hot water (70-75° C)(*)
8. Dry with hot air (avoid drying systems that could remove the passivation)

TREATMENT OF OXIDIZED AND/OR SULFURATED PIECES

1. Electrolytic degreasing
2. Rinse
3. Acid neutralization
4. Rinse

5. **STANDARD USAGE:** Immersion in T-PRO for 10 minutes (with moderate agitation)

ELECTROLYTIC USAGE: Immersion in T-PRO with T-SALT conducting salts (previously dissolved in) for 5-6 minutes (with moderate agitation) at about 3.5 - 4.5 V

6. Rinse with demineralized water
7. Rinse in hot water (70-75° C)(*)
8. Dry with hot air (avoid drying systems that could remove the passivation)

â€œ(*) In case of items with complicated designs, liquid residuals can be removed more efficiently by rinsing in very hot water (85° C).

(**) If you are dealing with Argentium alloys, never use electrolytic degreasing. Use only neutral pH detergents (7-9) by simple dipping or by ultrasonic bath. Optimal cleaning results may be achieved by using the LEGOR CLEANING KIT system.

**SUPPLEMENTARY INFORMATION****REPLACING THE PASSIVATION SOLUTION**

In case of reduction of the volume due to water evaporation, solution has to be replenished by demineralized water. T-PRO50 concentrate should be added to the solution if the effectiveness of the passivating solution becomes weaker. Replenish with warm (60-65°C) T-PRO50 concentrate make-up. For this purpose, pre-dissolve the warm make-up in 55°C warm water in a 1:2,5 ratio. Stir the mixture well as it must be completely clear before addition. Standard values are 2-5 ml per liter and week.

Effectiveness of the solution can be checked by submitting the pieces to a TAA test. Another important indicator can be represented by the level of the surface hydrophobicity. A properly working solution should give a surface with low water adherence, where water drops slip away easily.

SAFETY INFORMATION

Classification and designation are noted in the Material Safety Data Sheet (according to the European legislation). The safety instructions and the instructions for the environmental protection have to be followed in order to avoid hazards for people and environment. Please consider the explicit details in our Material Safety Data Sheets.

DISCLAIMER

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